EXPLANATION OF DATA TABLES FOR COOK INLET ASSESSMENT PROVINCE

RESULTS

LOG-N PARAMS (PORE) Key mathematic parameters that describe log-normal probability distributions for volume of hydrocarbon-bearing rock, in acre-feet, for each play as reported in the **PORE** module of **GRASP**.

mu Natural logarithm of F50 value of log-normal distribution for volume of hydrocarbon-bearing rock, or "μ", for the subject play. **mu** = ln F50. [Note: distribution **mean** = $e^{(mu + 0.5[sig. sq.])}$.]

sig. sq. The variance of the log-normal distribution for volume of hydrocarbon-bearing rock, or "σ^2", for the subject play. **sig. sq.** = $\{ln [0.5((F50/F16)+(F84/F50))]\}^2$.

N (MPRO) Number of hydrocarbon pools calculated for the plays by the **MPRO** module of **GRASP** from inputs for probability distributions of prospect numbers and geologic chances of success (approximately the product of play and prospect chances of success) . The maximum (**Max**) number of pools for each play was entered into the **MONTE1** module of **GRASP** to fix the number of pools aggregated to calculate play resources.

Reserves Sums of recoverable oil and gas volumes for pools within the play, including both proven and inferred reserve categories. A "prop" entry indicates that the reserve data are proprietary.

BCF Billions of cubic feet of gas, recoverable, at standard (surface) conditions (here fixed at a temperature of 60° Fahrenheit or 520° Rankine, and 14.73 psi atmospheric pressure).

MMB Millions of barrels of oil, recoverable, at standard (surface) conditions.

Undiscovered Potential Risked, undiscovered, conventionally recoverable oil and gas resources of the play, here reported at **Means** of probability distributions.

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Mean Pool Sizes of Ranks 1 to 3   Unrisked (or conditional) mean volumes of recoverable oil and gas in the three largest pools in the play.

PLAY INPUT DATA

F100.....F00

Fractiles for values within probability distributions entered to **GRASP** for calculations of play resources. Four-point distributions (F100, F50, F02, F00) generally indicate that calculations were conducted using log-normal mathematics. Eight-point distributions generally indicate that calculations were conducted using Monte Carlo mathematics. Choice of mathematic approach was in most cases the option of the assessor.

Prospect Area

Maximum area of prospect closure, or area within spill contour, in acres. Probability distributions for prospect areas were generally based on distributions assembled independently for each play from large numbers of prospects mapped with seismic reflection data.

Trap Fill

Trap fill fraction, or fraction of prospect area in which the reservoir is predicted to be saturated by hydrocarbons.

Pool Area

Areal extent of hydrocarbon-saturated part of prospect, in acres. Calculated using **PRASS**, or **SAMPLER** module of **GRASP**, to integrate input probability distributions for prospect areas and trap fill fractions.

Pay Thickness

Thickness of hydrocarbon-productive part of reservoir within pool areas, in feet. Probability distributions for prospect areas, trap fill fractions, and pay thicknesses are integrated in the **PORE** module of **GRASP**, to calculate a probability distribution for volume of hydrocarbon-bearing rock, in feet, within the play as reported above under **LOG-N PARAMS (PORE)** .

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Oil Yield (Recov. B/Acre-Feet)   Oil, in barrels at standard (surface) conditions, recoverable from a volume of one acre-foot of oil-saturated reservoir in the subsurface. Oil yield probability distributions were generally calculated in a separate exercise using **PRASS** to integrate input probability distributions for porosities, oil saturations, oil shrinkage factors (or "Formation Volume Factors"), and oil recovery efficiencies.

Gas Yield (MMCF/Ac.-Ft.)   Gas, in millions of cubic feet at standard (surface) conditions, recoverable from a volume of one acre-foot of gas-saturated reservoir in the subsurface. Distributions were generally calculated in a separate exercise using **PRASS** to integrate input probability distributions for porosities, gas saturations, reservoir pressures, reservoir temperatures (in degrees Rankine), gas deviation ("Z") factors, combustible fractions (that exclude noncombustibles such as carbon dioxide, nitrogen, etc.), and gas recovery efficiencies.

Solution Gas-Oil Ratio (CF/B)   Quantity of gas dissolved in oil in the reservoir that separates from the oil when brought to standard (surface) conditions, in cubic feet recovered per barrel of produced oil.

Gas Cond. (B/MMCF)   Quantity of liquids or condensate dissolved in gas in the reservoir that separates from the gas when brought to standard (surface) conditions, in barrels recovered per million cubic feet of produced gas.

Number of Prospects.......   Probability distributions for numbers of prospects in plays, generally ranging from minimum values (F99) representing the numbers of mapped prospects, to maximum values (F00) that include speculative estimates for the numbers of additional prospects that remain unidentified (generally stratigraphic prospects, geophysically indefinite prospects, or prospects expected in areas with no seismic coverage).

EXPLANATION OF DATA TABLES FOR COOK INLET ASSESSMENT PROVINCE

Probabilities for Oil, Gas, or Mixed Pools

Oil (OPROB)   Fraction of hydrocarbon pools that consist entirely of oil, with no free gas present. Typically, an undersaturated oil pool.

Gas (GPROB)   Fraction of hydrocarbon pools consisting entirely of gas, with no free oil present.

Mixed (MXPROB)   Fraction of hydrocarbon pools that contain both oil and gas as free phases, the gas usually present as a gas cap overlying the oil.

Fraction of Net Pay to Oil (OFRAC)   When a hydrocarbon pool is modeled as a mixed case, with both oil and gas present, the fraction of pool volume that is saturated by oil in the subsurface.

Play Chance Success   Probability that the play contains <u>at least one</u> pool of technically-recoverable hydrocarbons (that would flow into a conventional wellbore in a flow test or during production).

Prospect Chance Success   The fraction of prospects within the play that are predicted to contain hydrocarbon pools, <u>given the condition</u> that at least one pool of technically-recoverable hydrocarbons occurs within the play.

Play Type (E-F-C)   Play classification scheme.

    E   **Established** play, in which significant numbers of fields have been discovered, providing the assessor with data for pool size distributions and reservoirs sufficient to allow the assessor to model the play with confidence.

    F   **Frontier** play, where exploration activities are at an early stage. Some wells have already been drilled to test the play concept but no commercial fields have been established.

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C   **Conceptual** play, hypothesized by analysts based on the subsurface geologic knowledge of the area. Such plays remain hypothetical and the play concept has not been tested.

COOK INLET

No.	Area	UAI Code	Play Name	Log-N Params. PORE Ac/Ft mu	Ac/Ft sig. sq.	N (MPRO) No. Pools Mean	Max	Reserves Gas (BCF)	Oil (MMB)	Undiscovered Potential Gas (BCF)	Oil (MMB)
1	Cook Inlet	UACI0101	TERTIARY STRATIGRAPHIC	12.203	0.8270	3.26	22	0	0	294	276
2	Cook Inlet	UACI0201	MESOZOIC STRATIGRAPHIC	12.165	0.9407	3.35	24	0	0	240	195
3	Cook Inlet	UACI0301	MESOZOIC STRUCTURAL	12.113	1.0394	5.31	21	0	0	364	266

MEAN POOL SIZES OF RANKS 1 TO 3 / INPUT DATA

No.	PLAY Name	Pool #1 Gas (BCF)	Pool #1 Oil (MMB)	Pool #2 Gas (BCF)	Pool #2 Oil (MMB)	Pool #3 Gas (BCF)	Pool #3 Oil (MMB)	Prospect Area (Acres) F100	F95	F75	F50	F25	F05
1	TERTIARY STRATIGRAPHIC	184.5	173.63	97.79	92.051	69.269	65.629	400	1727		4700		12788
2	MESOZOIC STRATIGRAPHIC	154	124.55	79.916	64.709	56.782	46.221	313	1385		4500		14623
3	MESOZOIC STRUCTURAL	163.28	122.81	78.974	59.46	51.402	38.927	134	1069		5549		22647

INPUT DATA

No.	PLAY Name	Prospect Area (Acres) F02	F01	F00	Trap Fill (Dec. Frac.) F100	F95	F75	F50	F25	F05	F02	F01	F00
1	TERTIARY STRATIGRAPHIC			20000	0.2	0.24		0.4		0.75			1.00
2	MESOZOIC STRATIGRAPHIC			24000	0.2	0.24		0.4		0.75			1.00
3	MESOZOIC STRUCTURAL			32007	0.2	0.24		0.4		0.75			1.00

INPUT DATA

No.	PLAY Name	Pool Area (Acres) F100	F95	F75	F50	F25	F05	F02	F01	F00	Pay Thickness (Feet) F100	F95	F75	F50	F25
1	TERTIARY STRATIGRAPHIC	105	542		1994		7342			37984	19	48		100	
2	MESOZOIC STRATIGRAPHIC	81	474		1920		7785			45485	18	47		100	
3	MESOZOIC STRUCTURAL	85	552		2430		10692			69255	13	34		75	

COOK INLET

INPUT DATA

No.	Name	Pay Thickness (Feet)				Oil Yield (Recov. B/Acre-Foot)								Gas Yield (MMCF/Ac.-Ft)			
	PLAY	F05	F02	F01	F00	F100	F95	F75	F50	F25	F05	F01	F00	F100	F95	F75	F50
1	TERTIARY STRATIGRAPHIC	208			526	154	235		328		459		700	0.236	0.389		0.576
2	MESOZOIC STRATIGRAPHIC	215			564	131	176		222		281		377	0.287	0.416		0.559
3	MESOZOIC STRUCTURAL	165			443	106	147		191		247		343	0.287	0.416		0.559

INPUT DATA

No.	Name	Gas Yield (MMCF/Ac.-Ft)				Solution Gas Oil Ratio (CF/B)								Gas Cond. (B/MMCF)			
	PLAY	F25	F05	F01	F00	F100	F95	F75	F50	F25	F05	F01	F00	F100	F95	F75	F50
1	TERTIARY STRATIGRAPHIC		0.855		1.405	450	520	550	675	698	730		800	20	35	42	52
2	MESOZOIC STRATIGRAPHIC		0.750		1.088	450	520	550	675	698	730		800	20	35	42	52
3	MESOZOIC STRUCTURAL		0.751		1.090	450	520	550	675	698	730		800	20	35	42	52

INPUT DATA

No.	Name	Gas Cond. (B/MMCF)				Number of Prospects in Play							
	PLAY	F25	F05	F01	F00	F99	F95	F75	F50	F25	F05	F01	F00
1	TERTIARY STRATIGRAPHIC	55	68		100	5	6		15		37		40
2	MESOZOIC STRATIGRAPHIC	55	68		100	5	6		15		46		50
3	MESOZOIC STRUCTURAL	55	68		100	18	19		25		48		50

INPUT DATA

No.	Name	Probabilities for Oil, Gas, or Mixed Pools			Fraction of Net Pay to Oil	Play Chance Success	Prospect Chance Success	Play Type
	PLAY	Oil (OPROB)	Gas (GPROB)	Mixed (MXPROB)	(OFRAC)			E - F - C
1	TERTIARY STRATIGRAPHIC	0	0	100	0.7	0.75	0.25	C
2	MESOZOIC STRATIGRAPHIC	0	0	100	0.7	0.75	0.23	C
3	MESOZOIC STRUCTURAL	0	0	100	0.7	1	0.18	F